BHARATHIAR UNIVERSITY, COIMBATORE

B.Sc. Electronics Degree Course

Scheme of Examination (CBCS PATTERN)

For candidates admitted during the Academic Year 2010-2011 and onwards

<table>
<thead>
<tr>
<th>SEM</th>
<th>Part</th>
<th>Sub Code</th>
<th>Subject and Paper</th>
<th>Examination</th>
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<td>Paper IV : Digital Principles and Applications</td>
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Notes: Hrs./Week: Instruction hrs. Dur.Hrs.: Duration in Hours Cutoff Marks: CIA Marks: 50 Total Marks: 50
### List of Elective papers (Colleges can choose any one of the papers as electives)

<table>
<thead>
<tr>
<th>Elective – I</th>
<th>A</th>
<th>PCB design and Fabrication</th>
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<tbody>
<tr>
<td></td>
<td>B</td>
<td>Advanced communication systems</td>
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<td>C</td>
<td>Computer Hardware and Maintenance</td>
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<td>B</td>
<td><strong>8085 Microprocessor Interfacing &amp; its Applications</strong></td>
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<td>Design with PIC Microcontroller</td>
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| Total | 3500 | 140 |

@ No University Examinations. Only Continuous Internal Assessment (CIA)

# No Continuous Internal Assessment (CIA). Only University Examinations.

* for Project report 120 marks and viva-voce 30 marks.

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MATERIALS SCIENCE

Subject Description: This subject is the introductory for Various Materials which plays vital role in the field of Electronics

Goals: Enable the students to learn the basic concepts of Materials Science

Objectives: Upon completion of the subject, the student should gain the knowledge about various materials and its bonding structure.

UNIT I  CHEMICAL BONDS


UNIT II  DIELECTRIC MATERIALS

Introduction – Fundamental definitions in dielectrics – Different types of electric polarization – Temperature and Frequency Effects – Electric Breakdown – Ferroelectric Materials

UNIT III  MAGNETIC MATERIALS


UNIT IV  SEMICONDUCTING MATERIALS

Introduction – Chemical bonds in semi conductors like Germanium and Silicon – Intrinsic and Extrinsic semiconductors – Carrier concentration in intrinsic Semiconductors - Carrier concentration in N type Semiconductors - Carrier concentration in P type Semiconductors.

UNIT V  NEW MATERIALS


TEXT BOOK:


BASIC ELECTRONICS

Subject Description: This subject is the introductory for electronics, it presents the basic components theorems, devices and circuit

Goals: Enable the students to learn the basics of Electronics

Objectives: Upon completion of the subject, the student should understand the Basic components and its operations Gain knowledge about Electric and Electronic circuits and Network theorems

UNIT I RESISTORS & INDUCTORS
Types of resistors: Fixed, Variable_ Brief mention of their construction and characteristics -Color coding of resistors-Connecting resistors in series and parallel.


UNIT II CAPACITORS

UNIT III ELECTRICAL ELEMENTS AND CIRCUITS

UNIT IV NETWORK THEOREMS
Superposition theorem-Thevenin Theorem-Thevenizing a circuit with two voltage sourcesthevenizing a bridge circuit-Norton’s Theorem-Thevenin Norton conversion-Conversion of voltages and current sources-Millman’s Theorem-Star and Delta conversion-Maximum power transfer theorem-Simple problems in DC circuits.

UNIT V AC CIRCUITS

TEXT BOOK:

SEM – I & II

Core Practical – I

BASIC ELECTRONICS LAB

(Any 16 Experiments)

1. Study of Multimeter – Checking of components.
2. Measurement of Amplitude, Frequency & Phase difference using CRO.
3. Verification of Ohm’s Law.
5. Resistance in series, parallel and series – Parallel.
6. Voltage and Current dividers
7. Verification of Kirchoff’s Law.
8. Wheatstone Bridge.
9. Verification of Norton’s theorem.
10. Verification of Thevenin’s Theorem.
11. Verification of Millman’s Theorem.
12. Verification of Superposition Theorem.
13. LCR Bridge.
15. Parallel resonance circuit.
17. Transient response of RL Circuit.
22. Verification of Maximum power transfer Theorem
23. Measurement of resistance and capacitance in series and parallel
1. Band Gap energy of Silicon / Germanium Diode.
4. Transistor Characteristics of CE Configuration.
5. Transistor Characteristics of CB Configuration.
6. Transistor Characteristics of CC Configuration.
7. Clipping Circuits.
8. Clamping Circuits.
11. V-I Characteristics of JFET.
12. V-I Characteristics of UJT.
13. UJT as Oscillator.
14. FET as Voltage Variable Resistor (VVR).
15. Characteristics of LDR.
17. Study of IR (Tx & Rx).
18. Study of LED and 7 Segment display.
20. Zener as a Voltage regulator.
21. ON / OFF control of relay using Opto – Couplers.
22. Characteristics of SCR.
23. TRIAC Characteristics.
SEMICONDUCTOR DEVICES

Subject Description: This subject is the introductory for electronic devices, it presents the basic components devices and circuits

Goals: Enable the students to learn the basics of Electronic devices

Objectives: Upon completion of the subject, the student should understand the Basic components and its operations Gain knowledge about Electric and Electronic circuits and devices

UNIT I PN JUNCTION DIODE

UNIT II SPECIAL DIODES
Zener diode - VI Characteristics – Breakdown - Backward diode - Varactor diode - Steprecovery diode - Point contact diode - Scott key diode - Tunnel diode - Gunn diode - Impaat diode - PIN diode - PNPN diode.

UNIT III BJT

UNIT IV FET AND UJT
Introduction to FET - Construction and operation of N-channel JFET - Drain characteristics - Comparison of JFET & BJT - Introduction to MOSFET - Enhancement MOSFET – Depletion MOSFET - FET as a voltage variable Resistor(VVR) - Introduction to UJT – Characteristics – UJT as relaxation oscillator - Introduction to PUT – SCR – TRIAC – DIAC

UNIT V OPTOELECTRIC DEVICES

TEXT BOOK:
2. S. L. Kakani, K. C. Bhan Dai “A TEXT BOOK OF ELECTRONICS”.
DIGITAL PRINCIPLES AND APPLICATIONS

Subject Description: The design of the subject is to impart the knowledge about code conversion, Boolean algebra, logic gates, combinational and sequential logic, and converters.

Goals: Enable the students to design the logical circuits

Objectives: Upon Completion of the subject, the student should be able to Convert one Number system to another number system, Construct truth tables for logic gates, Simplify Boolean expression, Write VHDL coding for logic circuits

UNIT I NUMBER SYSTEM AND CODES

UNIT II BOOLEAN ALGEBRA AND LOGIC GATES

UNIT III COMBINATIONAL LOGIC CIRCUITS

UNIT IV SEQUENTIAL LOGIC CIRCUITS

UNIT V D/A AND A/D CONVERTERS
Digital to Analog converters: Resistive divider type and Ladder type – Accuracy and Resolution. Analog to Digital converters: Counter – Ramp type – simultaneous conversion – Dual slopetype – Successive approximation type – Accuracy and resolution.

TEXT BOOKS
SEM – III
Core Paper – V

ELECTRONIC CIRCUITS

Subject Description : This subject describe the classification and operation of amplifiers, oscillators, rectifiers and filter circuits

Goals : Enable the students to become an electronic technician and circuit designer

Objectives : Upon completion of the subject, the student should be able to design and troubleshoot the amplifiers, oscillators, power supply and filters

UNIT I REGULATORS

UNIT II SMALL SIGNAL AMPLIFIERS

UNIT III POWER AMPLIFIERS
Operation and graphical representation of Class A, Class B, Class C and Class AB amplifiers – Maximum collector efficiency of class A power amplifier – Collector dissipation curve – Harmonic distortion – Class B push pull amplifier – Crossover distortion – Complementary symmetry push pull amplifier

UNIT IV FEEDBACK AMPLIFIERS
Basic concepts of feedback – Positive feedback – Negative feedback – Effects of negative feedback on gain, bandwidth and distortion – Noise – Voltage series feedback - Voltage shunt feedback – Current series feedback – Current shunt feedback

UNIT V OSCILLATORS AND MULTIVIBRATORS

TEXT BOOK
SEM – III                           Skill based Subject – I

COMPUTER ARCHITECTURE AND ORGANIZATION

Subject Description: This subject presents the Modern computer organization, Processor and memory design, Peripherals and recent system architecture.

Goals: Enable the students to learn the newest computer technology and trends.

Objectives: Upon Completion of the subject, the student should: Gain the knowledge of Processor and Memory Design and understand the recent computer organization and architecture

UNIT 1 MODERN COMPUTER ORGANIZATION


UNIT 2 PROCESSOR DESIGN AND DATA PATH

Introduction – Processor role – Processor design goals – Processor design process – Data path organization – Main memory interface – Local storage register file – Data path simple instructions

UNIT 3 MEMORY DESIGN AND MANAGEMENT

Introduction – Memory parameters – Classification of memory – Memory Technology – Main memory allocation – Static RAM IC – Dynamic RAM – ROM logic – Multiple memory decoding – Memory Hierarchy – Main memory drawbacks – Cache memory – Principle of cache – Virtual memory Concept – Advantage of Virtual memory

UNIT 4 COMPUTER PERIPHERALS


UNIT 5 ADVANCED SYSTEM ARCHITECTURE


TEXT BOOK

SEM – IV Core Paper – VI

PRINCIPLES OF COMMUNICATION SYSTEMS

Subject Description: An important consideration in the design of the subject is to

Provide knowledge about communication medium, transmitter, receiver and modulation techniques

Goals: Enable the students to learn the basic principles used in communication systems

Objectives: After successful completion of the course the students should understand the concepts and techniques in communication systems

UNIT I MODULATION TECHNIQUES


UNIT II TRANSMITTERS


UNIT III RECEIVERS

Super heterodyne principle – Image rejection – Choice of IF and oscillator frequencies – Tracking – Block diagram of AM receiver – FM receiver – SSB receiver

UNIT IV ANTENNA


UNIT V PROPAGATION OF RADIO WAVE

Reflection and refraction of radio waves: Reflection of radio waves at the surface of the earth – Ground or surface wave propagation – Space wave propagation – Sky wave propagation – Structure of Ionospheric Layer – Skip distance – Maximum Usable Frequency (MUF)

TEXT BOOKS

SEM – IV

IC’S AND INSTRUMENTATION
Subject Description: The design of the subject is to impart the knowledge on IC fabrication, Timer, PLL, Op-amp., transducers and electronic instruments.
Goals: Enable the students to acquire the knowledge of IC fabrication, and its application in electronic circuits and know the measurements using electronic instruments
Objectives: Upon Completion of the subject, the student should: Understand the IC fabrication, Design circuits with ICs and Gain knowledge about electronic instruments.

UNIT I IC FABRICATION TECHNOLOGY

UNIT II TIMER AND PLL

UNIT III OPERATIONAL AMPLIFIER

UNIT IV TRANSDUCERS

UNIT V ELECTRONIC INSTRUMENTS

TEXT BOOKS
BIO-MEDICAL INSTRUMENTATION

Subject Description: The design of the subject is to impart the knowledge on Biomedical Equipments like Biopotential Recorders, Pacemakers, Diathermy equipments and biotelemetry.

Goals: Enable the students to acquire the knowledge on diagnostic and therapeutic equipments in the field of Biomedical Instrumentation.

Objectives: Upon Completion of the subject, the student should: Understand the knowledge about Biomedical Equipments.

UNIT I


UNIT II


UNIT III


UNIT IV


UNIT V


TEXT BOOKS
SEM – III & IV  
Core Practical – III

ELECTRONIC CIRCUITS & ELECTRONIC COMMUNICATION LAB
(Any 16 Experiments)

ELECTRONIC CIRCUITS
1. DC regulated power supply using Zener diode
2. Voltage doubler
3. Feedback amplifier
4. Emitter follower
5. Transformer coupled amplifier
6. Hartley Oscillator
7. Colpitts oscillator
8. Phase shift Oscillator
9. Wein Bridge oscillator
10. RC coupled amplifier
11. Half wave and full wave rectifier
12. Filter circuits

ELECTRONIC COMMUNICATION
13. Performance of IF Amplifier
14. AM Modulation and Detection
15. FM Modulation and Detection
16. PAM modulation
17. PIN diode oscillator
18. Alignment of dish antenna
19. Alignment of satellite receiver
20. PWM modulation
21. PPM modulation
22. PCM modulation
23. GUNN diode oscillator
DIGITAL & MEDICAL ELECTRONICS LAB
(Any 16 Experiments)

DIGITAL ELECTRONICS
1. Verification of basic gates and universal gates
2. Verification of Demorgan’s Theorem
3. Half adder and full adder
4. Half subtractor and full subtractor
5. 4-bit binary adder
6. Multiplexer and De multiplexers
7. Encoder and Decoder
8. BCD to 7-segment Display
9. Study of Flip Flops
10. Binary to Grey and Grey to Binary conversion
11. Shift registers and ring counter
12. Analog to Digital converter
13. Digital to Analog converter
14. Design and Simulation of Logic Gate using VHDL Coding
15. Design and Simulation of Adder Circuits using VHDL Coding
16. Design and Simulation of Encoder and Decoder using VHDL Coding
17. Parity checker and generator
18. 4 bit binary counter
19. Decade counter
20. BCD counter/ adder

MEDICAL ELECTRONICS
21. Pulse Rate Monitor.
22. Temperature monitor using AD 590
23. ECG Measurement
24. Notch filter
25. Pacemaker
SEM – IV  

VISUAL PROGRAMMING

Subject Description: The subject presents windows programming, visual basic programming, Visual C++ programming, ODBC and GUI

Goals: Enable the students to learn the Visual programming

Objectives: After successful completion of the course the students acquire knowledge about visual programming and able to program the applications using VB and VC++

UNIT I

UNIT II

UNIT III

UNIT IV
Database Connectivity – Min Database Applications – Embedding Controls in View creating user defined DLL’s – Dialog Based Applications – Dynamic Data Transfer Function – Data Base Management with ODBC – Communicating with other applications – Object Linking and Embedding.

UNIT V

TEXT BOOKS

REFERENCES
SEM – V

Core Paper – IX

8085 MICROPROCESSOR

Subject Description: This subject presents the architecture, Programming in 8085ALP and real world applications of the 8085 microprocessor

Goals: To enable the students to learn the instruction set, programming, and interfacing concepts of 8085microprocessor

Objectives: On successful completion of the course the students should have: Developed the programming skills in 8085ALP Understood the interfacing concept memory, & I/O devices. Understood the concept of microprocessor based system design

UNIT I  MICROPROCESSOR ARCHITECTURE
Microprocessor architecture and its operation – Memory map of 1k memory chip – memory and instruction fetch – 8085 microprocessing unit – Bus timings – Demultiple4xing the bys AD7 – AD0 – Generating control singles – Functional Block diagram of 8085.

UNIT II  TIMINGS AND INSTRUCTION SET

UNIT III  PROGRAMMING THE 8085
Data transfer operations – arithmetic operations – Logical operations – Branch operations – Looping, counting and indexing – addition, subtraction of 8 and 16 bit numbers.

UNIT IV  TIME DELAY
Time delay using a single register – Time delay using a register pair – Counter design of Time delay program. Function of PUSH, POP, CALL and RET instructions.

UNIT V  MEMORIES

TEXT BOOKS
INTERNET & JAVA PROGRAMMING

**Subject Description**: The design of the subject is to provide knowledge about internet, Java data types, classes and files

**Goals**: Enable the students to learn the internet concept and Java programming systems

**Objectives**: After successful completion of the course the students should Gain knowledge about the concepts of Internet and able to program the applications using Java

**UNIT I**

Internet – Introduction- Understanding Internet- Internet Addressing - Hardware Requirements to Connect to the Internet

**UNIT II**

Data types, Arrays, Operators, Flow control – Branching, Looping

**UNIT III**

Classes – New Operator, Dot Operator, Method Declaration and Calling, Constructors, This In Constructors, Inheritance, Super, Method Overriding Final, Finalize, Static, Package and Import Statement, Interface and Implements

**UNIT IV**

Exception Handling – Exception Types, Uncaught and Calling, Nested Try Statements, Java Thread Model, and Thread, Runnable, Thread Priorities, Synchronization, Deadlock

**UNIT V**


**TEXT BOOKS**

SEM – VI

8051 MICROCONTROLLER AND EMBEDDED SYSTEMS

UNIT I
Microprocessor and Microcontroller – 8051 Microcontroller hardware:

UNIT II PERIPHERAL

UNIT III ARITHMETIC AND LOGICAL OPERATIONS

Unit IV : Introduction to Real-Time Operating Systems

Unit V : Basic Design Using a Real – Time Operating System :

TEXT BOOKS:

REFERENCE BOOKS:
IC, TV AND INDUSTRIAL ELECTRONICS LAB
(ANY 16 EXPERIMENTS)

IC LAB
1. Astable multivibrator using 555
2. Monostable multivibrator using 555
3. Inverting and Non Inverting amplifier
4. Adder and Subtractor using IC 741
5. Instrumentation Amplifier
6. Voltage to Current Converter and Current to Voltage
7. Wein Bridge oscillator using IC 741
8. Square wave and Triangular generator
9. Schmitt Trigger using IC 741

TV LAB
10. Video IF section of TV Receiver
11. EHT Generation
12. Sync Separator
13. Horizontal Section faults
14. Vertical Section faults
15. Tuner Section faults
16. Video Section faults
17. Picture tube basing faults
18. Video IF section faults

INDUSTRIAL ELECTRONICS LAB
19. Automatic Street light
20. Single Phase Inverter
21. DC Choppers (Step up and Step down)
22. R and RC Triggering
23. External Pulse Commutation
24. DC motor controller and Light Dimmer
25. Time delay circuit

MICRO PROCESSOR AND INTERFACING LAB
(ANY 16 EXPERIMENTS)

8085 MICROPROCESSOR LAB
1. Addition / subtraction of 8 / 16 bit data.
2. Multiplication / division 8 bit data.
3. Block data transfer.
4. Smallest / largest of N numbers.
5. To arrange in ascending / descending order.
6. Sum of N 8 bit numbers.
7. 1’s and 2’s compliment of an array (8 / 16 bit).
8. UP/DOWN counter using 7 segment displays.
10. Data transfer using 8255 (PPI).
11. Square wave generator using 8255.
12. ADC interface.
13. DAC interface.
15. Solid State Relay Interface
16. Time Delay Programme
17. Digital Clock
18. Rolling and Blinking of a message
19. LCD interface
20. Frequency Counter
21. Water level Indicator
22. DC motor interface
23. Temperature controller

SEM – V & VI

MICROCONTROLLER LAB
(ANY 16 EXPERIMENTS)

8051 MICROCONTROLLER LAB
1. Addition / subtraction of 8 / 16 bit data.
2. Multiplication / division 8 bit data.
3. Block data transfer.
4. Smallest / largest of N numbers.
5. To arrange in ascending / descending order.
6. Sum of N 8 bit numbers.
7. 1’s and 2’s compliment of an array (8 / 16 bit).
8. UP/DOWN counter using 7 segment displays.
10. Wave form generation.
11. ADC interface.
12. DAC interface.
14. Solid State Relay Interface
15. Time Delay Programme
16. Digital Clock
17. Rolling and Blinking of a message
18. LCD interface
19. Frequency Counter
20. Water level Indicator
21. DC motor interface
22. Temperature controller
VISUAL AND JAVA PROGRAMMING LAB

VISUAL PROGRAMMING (ANY 8 EXPERIMENTS)

2. Working with Intrinsic Control and Active X controls.
3. Create an Application with multiple forms and dialogs.
4. Write a VB program to design an e-mail registration form.
5. Create an Application with Menu editor.
6. Create an Application with DAO controls
7. Create an Application using Common dialogs.
8. Write a program for Drag and Drop Events.
9. Create a Database for library management using ADD controls.
10. Creating an application using Active X control.
11. Create a Scientific calculator in VB.
12. Develop a VB application to either link or embed MS Word document to an OLE control.
13. Display Student information using Grid control.
15. Develop an application to perform the following operation in the Employee table using DAO,
   
   i) Add a new Record.
   ii) Delete a Record.
   iii) Modify a Record.

JAVA PROGRAMMING (ANY 8 EXPERIMENTS)

1. Program to print the following triangle of numbers

   1
   12
   123
   1234

2. Defining a class with the following attributes 1. xname 2. Date of Birth 3. Date on which leg injection has to be given (sixty days from date of birth) 4. xdate on which polio drops is to be given (45 days from Date of birth). Write a constructor to construct the baby object. The constructor must find out the leg and polio drops dates from the date of birth. In the main program define a baby and display its details.
SEM – V  
Elective I – A

PCB DESIGN AND FABRICATION

UNIT I  
TYPES OF PCB


UNIT II  
LAYOUT AND ARTWORK


Basic artwork approaches – Artwork taping guidelines – General artwork rules – Artwork check and Inspection.

UNIT III  
LAMINATES AND PHOTO PRINTING


UNIT IV  
ETCHING AND SOLDERING

Introduction – Etching machine – Etchant system.


UNIT V  
DESIGN RULES AND AUTOMATION

Reflection – Crosstalk – Ground and Supply line noise – Electromagnetic interference from pulse type EM fields and automation – Automated artwork drafting – CAD.

Text Books:

ADVANCED COMMUNICATION SYSTEMS

UNIT I DATA COMMUNICATION


UNIT II PULSE COMMUNICATION


UNIT III SATELLITE COMMUNICATION


Inside Satellite: Transponder – Antenna System – Power Package and Station Keeping – Forms of Modulation – Free path space losses – Ground Station – Aligning the satellite dish

UNIT IV CELLULAR COMMUNICATION SYSTEM

Introduction Cellular Mobile System – Basic Cellular System – Operational Cellular System – Maximum number of Calls per cell – Maximum number of Frequency channels concept of frequency channel cell splitting – permanent splitting – real time splitting – Frequency Management – Channel Assignment

UNIT V OPTICAL COMMUNICATION

Introduction to Optical fibers – Optical fiber structure – Numerical aperture – Propagation of light rays through it – Application of Optical Fiber (Video link, Satellite link, Computer link, Communicating antenna Television link)

TEXT BOOKS:
5. Subir Kumar Sarkar “Optical Fiber Communication systems”, S.Chand and Company
SEM – V

**COMPANY HARDWARE AND MAINTENANCE**

**UNIT I**  **COMPANY HARDWARE OVERVIEW**


**UNIT II**  **MOTHER BOARD FUNCTIONS**


**UNIT III**  **FLOPPY DISK CONTROLLER**


Display adapter introduction – CRT display – 6845 CRT controller – CGA & AGA – Device interface

**UNIT IV**  **HARD DISK CONTROLLER AND PRINTER**

Introduction – Overview of HDC organization – Disc drives types and interface – Hard disk card – Hard disk format

Printer introduction: Centronics interface programming – Programming sequence – Hardware overview – Printer controller

**UNIT V**  **TROUBLE SHOOTING**


**TEXT BOOK**

TELEVISION ENGINEERING

UNIT I  TELEVISION STANDARDS


UNIT II  TELEVISION RECEIVER SECTION


UNIT III  SYNC SEPARATOR


UNIT IV  COLOUR TELEVISION


UNIT V  ADVANCE TECHNIQUES


TEXT BOOKS
MICROWAVE AND FIBER OPTIC COMMUNICATION SYSTEMS

UNIT I
INTRODUCTION TO MICROWAVES

UNIT II
MICROWAVE AMPLIFIERS AND OSCILLATORS
Microwave tubes: - Two cavity Klystron – Multi cavity Klystron – Reflex Klystron – Traveling wave tube (TWT) – Backward wave Oscillator (BWO) – Magnetron – Applications

UNIT III
MICROWAVE DEVICES

UNIT IV
RADAR

UNIT V
OPTICAL FIBER COMMUNICATION

TEXT BOOKS

REFERENCE
UNIT I  Introduction:

Automotive component operation Electrical wiring terminals and switching Multiplexed wiring systems Circuit diagrams and symbols. Charging Systems and Starting Systems: Charging systems principles alternations and charging circuits New developments requirements of the starting system Basic starting circuit.

UNIT II  Ignition systems:


UNIT III  Instrumentation Systems:

Introduction to instrumentation systems Various sensors used for different parameters sensing Driver instrumentation systems vehicle condition monitoring trip computer different types of visual display

UNIT IV  Electronic control of braking and traction:


UNIT V  Engine Management Systems:

Combined ignition and fuel management systems Exhaust emission control Digital control techniques Complete vehicle control systems Artificial intelligence and engine management Automotive Microprocessor uses. Lighting and Security Systems: Vehicles lighting Circuits Signaling Circuit Central locking and electric windows security systems Airbags and seat belt tensioners Miscellaneous safety and comfort systems

TEXT BOOK

1. TOM DENTON, Automobile Electrical and Electronic Systems, Edward Arnold pb., 1995

REFERENCES

2. WILLIAM, T.M., Automotive Mechanics, McGraw Hill Book Co.,
SEM – VI                      Elective III – A

INDUSTRIAL ELECTRONICS

UNIT I     THYRISTORS AND THEIR OPERATIONS


UNIT II     TURN ON/OFF MECHANISM


UNIT III    APPLICATION OF SCR


UNIT IV     INVERTORS

Types of invertors – Single phase bridge inverter – Mc Murray impulse communication inverter – Single phase half bridge voltage source inverter – Single phase full bridge voltage inverter – Step down choppers – Step up choppers – Chopper classification

UNIT V     APPLICATIONS


TEXT BOOKS:

SEM – VI  Elective III-B

ELECTIVE III 8085 MICROPROCESSOR INTERFACING & ITS APPLICATIONS

UNIT I MICROPROCESSOR ARCHITECTURE
Microprocessor architecture and its operation – Memory map of 1k memory chip – memory and instruction fetch – 8085 micro processing unit – Bus timing-Demultiplexing the bus AD7 – AD0 – Generating control singles – Functional Block diagram of 8085.

UNIT II TIMINGS AND INSTRUCTION SET
Decoding and Execution of an instruction – 8085 based microcomputer – Timing of the memory write cycle and read cycle – Opcode fetch cycle timing – Instruction classification – Instruction format – addressing modes - Data transfer operations – arithmetic operations – Logical operations – Branch operations – Looping, counting and indexing – addition, subtraction of 8 and 16 bit numbers – Time delay program.

UNIT III INTERFACING CONCEPTS

UNIT IV PERIPHERALS
The 8255A Programmable peripherals interface: Block diagram of 8255A, Mode 0 Simple i/p or o/p BSR mode, Programming the 8255A in mode1, mode 2 – Bidirectional data transfer – The 8259 Programmable Interrupt Controller – Block diagram of 8253 – Direct Memory access and the 8257 DMA Controller – 8279 Keyboard/Display Interfacing.

UNIT V APPLICATIONS

TEXT BOOKS
SEM – VI

DESIGN WITH PIC MICROCONTROLLERS

UNIT I  CPU Architecture and Instruction Set


UNIT II  Loop Time Subroutine, Timer2 and Interrupts


UNIT III  External Interrupts and Timers

RB0/INT External Interrupt input – Timer0 – Compare mode – Capture mode – Timer1/CCP Programmable Period Scaler – Timer1 External event counter – Timer1 and Sleep mode – PulseWidthModulated Outputs – PortB change interrupts.

UNIT IV  I/O Port Expansion


UNIT V  I^2 Bus for Peripheral Chip Access

I^2 Bus operation - I^2 Bus subroutines – DAC output – Temperature sensor – Serial EEPROM.

Text Books: